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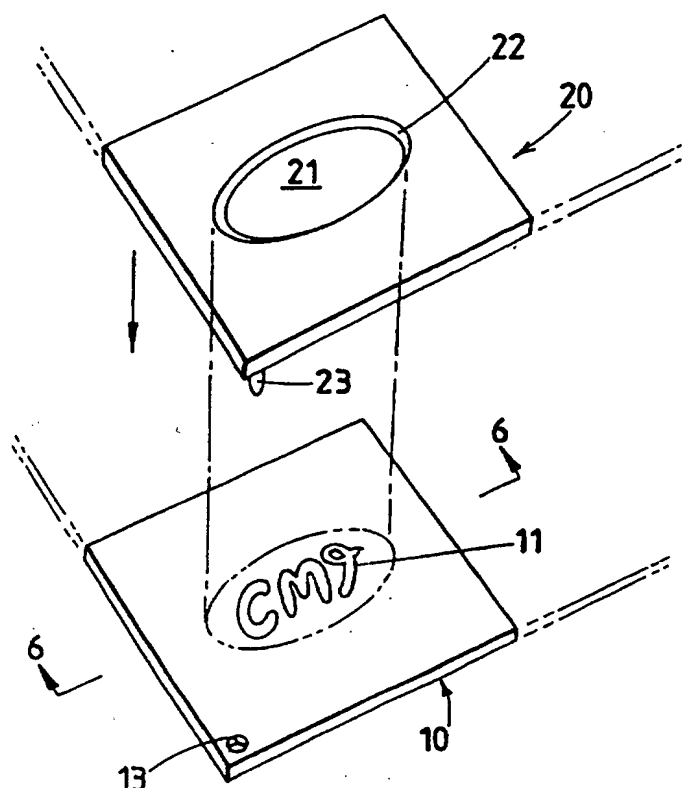
## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification <sup>6</sup> : <b>A23G 1/00, 1/22</b>		<b>A1</b>	(11) International Publication Number: <b>WO 97/39636</b>
			(43) International Publication Date: 30 October 1997 (30.10.97)
(21) International Application Number: PCT/AU97/00245		(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ARIPO patent (GH, KE, LS, MW, SD, SZ, UG), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).	
(22) International Filing Date: 22 April 1997 (22.04.97)			
(30) Priority Data: PN 9432 22 April 1996 (22.04.96) AU			
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(54) Title: CHOCOLATE WITH RAISED DESIGN

## (57) Abstract

A method of forming a chocolate product having a thin raised design thereon of a different colour than the rest of the chocolate product where a pattern (11) is engraved in a top face of a first mould plate (10), the pattern (11) is filled with chocolate of a first colour, a second mould plate (20) is placed with a mould cavity (21) in registry with the pattern (11) and the mould cavity (21) is filled with chocolate of a second colour. When the chocolate is cooled, the chocolate product is stripped from the mould plates (10, 20).



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TITLE: CHOCOLATE WITH RAISED DESIGN

BACKGROUND OF THE INVENTION

1. Field of the Invention

THIS INVENTION relates to an improved chocolate product  
5 and a method of producing same.

In particular, the invention relates to a method of producing a chocolate product having letters or other designs formed thereon of a different coloured chocolate or chocolate-like material than the rest of the chocolate product.

10 Throughout the specification, the term "chocolate material" is intended to include within its scope chocolate, chocolate-like material and chocolate substitute, eg., carob.

2. Prior Art

AU-B-66814/86 (583969) (GARRY JOHN GREEN) discloses  
15 a method of forming a chocolate product having a thin raised design thereon of a different colour than the rest of the chocolate product.

While the method disclosed in that specification enables a design formed in chocolate of one colour to be applied to chocolate of a second colour with a high degree of accuracy, the method, in practice,  
20 has a number of practical limitations.

In practice, the patterns or designs (eg., up to 36 in number) are engraved in a mould plate. Chocolate of a first colour is placed on the mould plate and spread over the plate, eg., with a plastic spatula, to fill the mould cavities and any excess chocolate is wiped off the exposed surface  
25 of the mould plate, eg., with tissue paper. A layer of the chocolate of the second colour is spread over the mould plate by hand, eg., using a spatula. The mould plate is shaken to remove any air bubbles; and is placed in a cooler, eg., for 10 minutes. When the chocolate is solid, the chocolate product is stripped from the mould plate and is then cut into  
30 squares using a knife guided by a template, which is placed over the exposed surface of the chocolate product bearing the design.

The above method has the following practical problems:

- a) the actual thickness, and any variation in thickness, of the chocolate product formed from the second coloured chocolate is dependent solely on the operator's skill;
- 5           b) cutting of the chocolate products from the solid sheet of chocolate is labourious, as the template must be laid on the sheet to enable, eg., the horizontal cuts, to be made and then rotated through 90 degrees to enable the vertical cuts to be made;
- 10           c) the location of the design on the chocolate products is variable, dependent on the placement of the cutting template on the chocolate sheet; and
- d) the corners of the chocolate products are likely to crack and break as the products are cut from the sheet.

15           A rejection rate of 50% is not uncommon. While the chocolate may be melted and re-used, the operator's time cannot be recycled and so productivity is relatively low.

#### SUMMARY OF THE INVENTION

20           It is an object of the present invention to provide an improved method which enables the defects of the above method to be overcome, or at least ameliorated.

            It is a preferred object of the present invention to provide a method where the chocolate products can be readily formed into one or more pre-selected shapes.

25           It is a further preferred object of the present invention to provide a method which is not so dependent on the operator's skills.

            Other preferred objects of the present invention will become apparent from the following description.

30           In a first aspect, the present invention resides in a method of forming a chocolate product having a thin raised design thereon of a different colour than the rest of the chocolate product, said method comprising the steps of:

engraving a first mould plate, the pattern being a mirror-image of the desired design on the product;

introducing into said engraved pattern sufficient liquid chocolate material of a first colour to at least fill the engraved pattern;

5 removing any excess material of the first colour from the first mould plate;

placing a second mould plate on the first mould plate, the second mould plate having a mould cavity of pre-selected shape therein in register with the engraved pattern;

10 introducing liquid chocolate material of a second colour into said mould cavity to cover the chocolate material of the first colour;

cooling both chocolate materials in the mould plates to solidify them and bond them together; and

15 removing the resultant chocolate product so formed from the mould plates.

Preferably, a plurality of identical patterns are engraved in a first mould plate by computer assisted engraving.

Preferably, the first mould plate and the second mould plate are formed from resilient plastics material.

20 Preferably, one of the first and second colours is a white or cream colour, and the other colour is brown.

Preferably, the second mould plate is flexible and is engageable with the first mould plate in a non-slip contact.

25 Preferably, the mould cavity in the second mould plate has an inclined or bevelled side wall to enable a chocolate product to be easily stripped from the second mould plate.

Preferably, a plurality of engraved patterns (eg., 36 in number) are provided in the first mould plate and a respective mould cavity for each engraved pattern is provided in the second mould plate.

30 In plan view, the mould cavities may be square, rectangular, elliptical, circular, heart-shaped, fan-shaped or any other regular or

irregular shape.

In a second aspect, the present invention resides in a chocolate product formed by the method as hereinbefore described.

#### BRIEF DESCRIPTION OF THE DRAWINGS

5 To enable the invention to be fully understood, a preferred embodiment will now be described with reference to the accompanying drawings, in which:

FIG 1 is a perspective view of the computer-assisted laser-cut engraving of the first mould plate;

10 FIG 2 is a sectional side view of the first mould plate taken on line 2-2 on FIG 1;

FIGS 3 and 4 are respective sectional side views of the first chocolate colour being applied to the first mould plate;

15 FIG 5 is an isometric view showing the first and second mould plates in an exploded configuration;

FIG 6 is a sectional view taken on line 6-6 on FIG 5 showing the moulding of a chocolate product in accordance with the present invention; and

20 FIG 7 is a perspective view of the chocolate product on release from the mould plates.

#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

25 The first mould plate 10 has a design 11 engraved, eg., by a computer assisted engraving machine 100, in a regular array in the top surface 12 of the first mould plate 10 (see FIGS 1 and 2). The first mould plate 10 may be formed from engraving plastic laminate.

The engraving machine 100 has a laser unit 101, where the pattern cut by the laser beam 102 is controlled by a computer program in a computer 103.

30 The second mould plate 20 (see FIG 5) is formed from a sheet of silicone rubber which may be, eg., 2, 3, 4 or 6mm thick - the thickness of this sheet will determine the thickness of the chocolate

product. A suitable silicone rubber sheet is sold under the trade mark ELASTOSIL RTV by Wacker Chemicals under Product Code No. M4642. (In an alternative embodiment, the second mould plate 20 is formed from polyurethane or other inert plastics material.)

5 A mould cavity 21 extends through the second mould plate 20 and in this embodiment has a substantially elliptical shape with inclined side wall 22. It will be noted that when the second mould plate 20 is placed on the first mould plate 10, the mould cavity 21 is open to the engraved pattern 11.

10 Suitable spigot/hole combinations 22, 13 may be provided at the corners of the mould plates 10, 20, to ensure accurate register of the two plates together.

Alternatively, the physical characteristics of the plastics materials of the two mould plates 10, 20 may ensure that the mould plates  
15 have a non-slip contact when brought together.

To produce the chocolate product 50, the chocolate of the first colour 30 is spread over the engraved design 11 in the top surface 12 of the first mould plate 10 by, e.g, a plastic spatula 60 and is forced into the engraved design 11 (see FIG 3).

20 Any excess chocolate is then wiped from the top surface 12 by the spatula 60 (see FIG 4).

The second mould plate 20 is then brought into register with the first mould plate 10 so that the chocolate of the first colour 30 is exposed to the mould cavity 21 (see FIG 5). Chocolate of the second  
25 colour 40 is then placed in the mould cavity 21 to fill the cavity and the mould plates 10, 20 may be tapped to release any trapped air bubbles.

Mould plates 10, 20 and the chocolate 30, 40 are placed in a cooler, eg., for 10 minutes, until the chocolate 30, 40 is solid. The second mould plate 20 is stripped from the first mould plate 10 and then the  
30 chocolate product 50 is released from the mould cavity 21.

By using the method of the present invention, the following

advantages are achieved over the method disclosed in AU-B-66814/86:

(1) Different shapes of chocolate product 50 are easily produced, and the shapes are readily reproducible;

5 (2) The thickness of the chocolate of the second colour 40 is controlled by the thickness of the second mould plate 20, and the second mould plate 20 can be made from suitable plastic sheets in a range of thicknesses;

(3) The edges of the chocolate product 50 are accurately moulded and are less liable to damage;

10 (4) The design of the chocolate of the first colour 30 is more accurately located on the chocolate of a second colour 40 and the accuracy is more easily produced;

(5) As a cutting template is not placed on the top face of the chocolate product 50, there is less likelihood of the design on that face  
15 being damaged;

(6) The moulded edges on the chocolate product 50 ensure that there is no excess chocolate on the edges to be removed, and the chocolate product 50 can be bagged immediately;

(7) The level edges 22 of the mould cavity 21 ensure  
20 simple, clean release of the chocolate product from the second mould sheet 20;

(8) The resultant chocolate product 50 has an improved aesthetic appearance;

(9) A lower skill level is required for the operators to  
25 manufacture the chocolates; and

(10) Productivity is greatly improved.

Various changes and modifications may be made to the embodiments described and illustrated without departing from the present invention.



CLAIMS

1. A method of forming a chocolate product having a thin raised design thereon of a different colour than the rest of the chocolate product, said method comprising the steps of:
  - 5 engraving a first mould plate, the pattern being a mirror-image of the desired design on the product;
  - introducing into said engraved pattern sufficient liquid chocolate material of a first colour to at least fill the engraved pattern;
  - removing any excess material of the first colour from the first
  - 10 mould plate;
  - placing a second mould plate on the first mould plate, the second mould plate having a mould cavity of pre-selected shape therein in register with the engraved pattern;
  - introducing liquid chocolate material of a second colour into
  - 15 said mould cavity to cover the chocolate material of the first colour;
  - cooling both chocolate materials in the mould plates to solidify them and bond them together; and
  - removing the resultant chocolate product so formed from the mould plates.
- 20 2. A method as claimed in Claim 1 wherein:
  - a plurality of identical patterns are engraved in a first mould plate by computer assisted engraving.
3. A method as claimed in Claim 1 or Claim 2 wherein:
  - 25 the first mould plate and the second mould plate are formed of resilient plastics material.
4. A method as claimed in any one of Claims 1 to 3 wherein:
  - one of the first and second colours is a white or cream colour, and the other colour is brown.
5. A method as claimed in any one of Claims 1 to 4 wherein:
  - 30 the second mould plate is flexible and is engageable with the first mould plate in a non-slip contact.

6. A method as claimed in Claim 5 wherein:

the mould cavity in the second mould plate has an inclined or bevelled side wall to enable the chocolate product to be easily stripped from the second mould plate.

5 7. A method as claimed in any one of Claims 1 to 6 wherein:

a plurality of engraved patterns are provided in the first mould plate and a respective mould cavity for each engraved pattern is provided in the second mould plate.

8. A method as claimed in Claim 7 wherein:

10 in plan view, the mould cavities are square, rectangular, elliptical, circular, heart-shaped, fan-shaped or any other regular or irregular shape.

9. A chocolate product formed by the method as claimed in any one of Claims 1 to 8.

15 10. An apparatus for the manufacture of a chocolate product having a thin raised design thereon of a different colour than the rest of the chocolate product, the apparatus including:

a first mould plate adapted to have a pattern engraved on a top face thereof, the pattern being a mirror-image of the design;

20 a computer-controlled laser engraving machine operable to engrave the pattern on the first mould plate; and

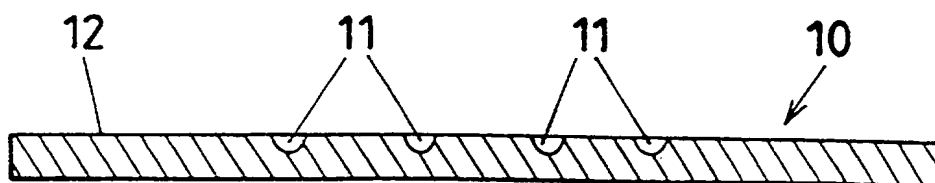
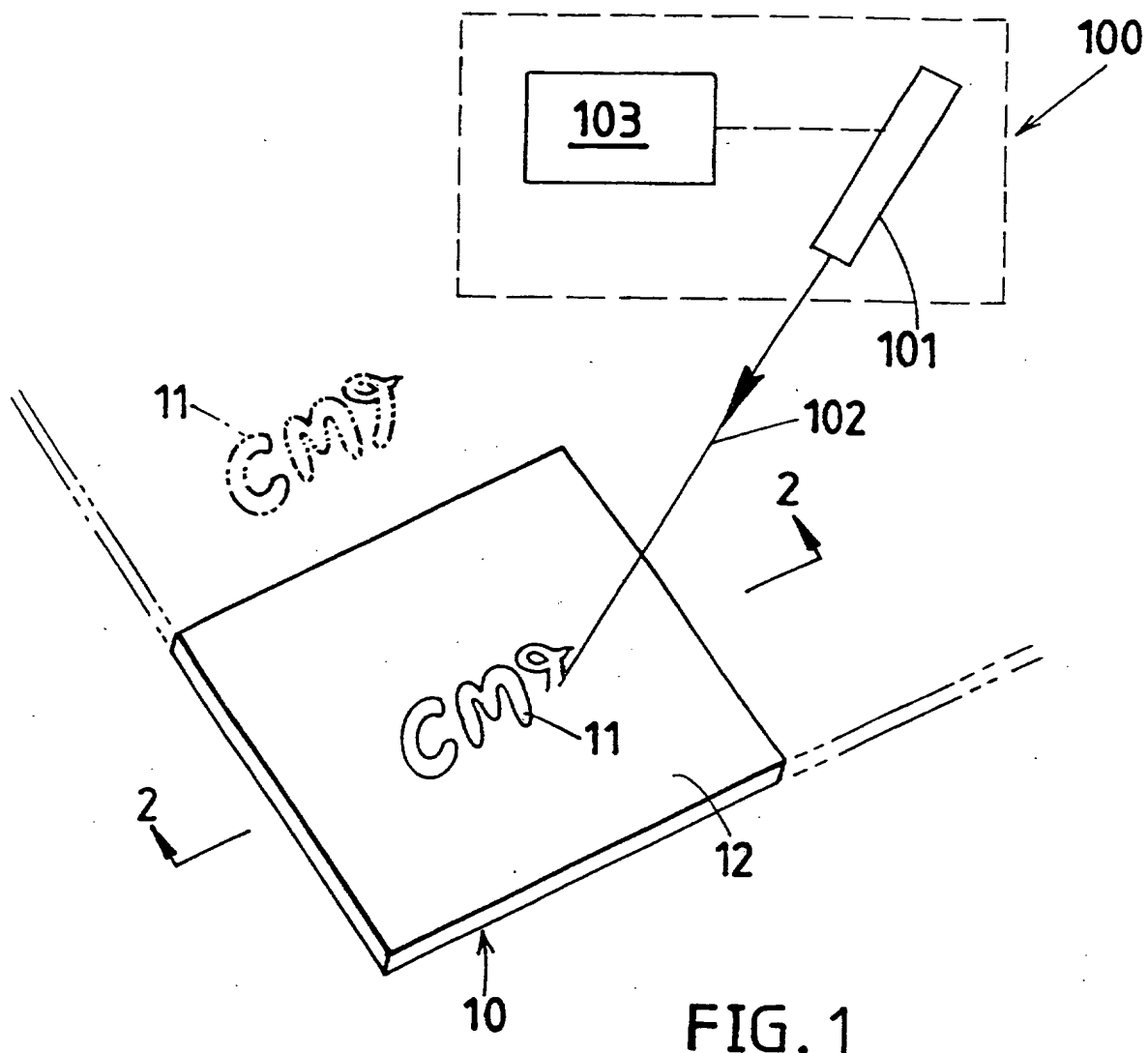
a second mould plate having a mould cavity of pre-selected shape therein for regulation with the pattern, so arranged that:

25 the engraving machine engraves the pattern on the top face of the first mould plate;

the second mould plate is placed on the first mould plate with the mould cavity in registry with the pattern after chocolate of the different colour has been placed in the pattern; and

30 the first and second mould plates are separated when the chocolate of the rest of the chocolate product has been placed in the mould cavity and the chocolate product has been cooled.

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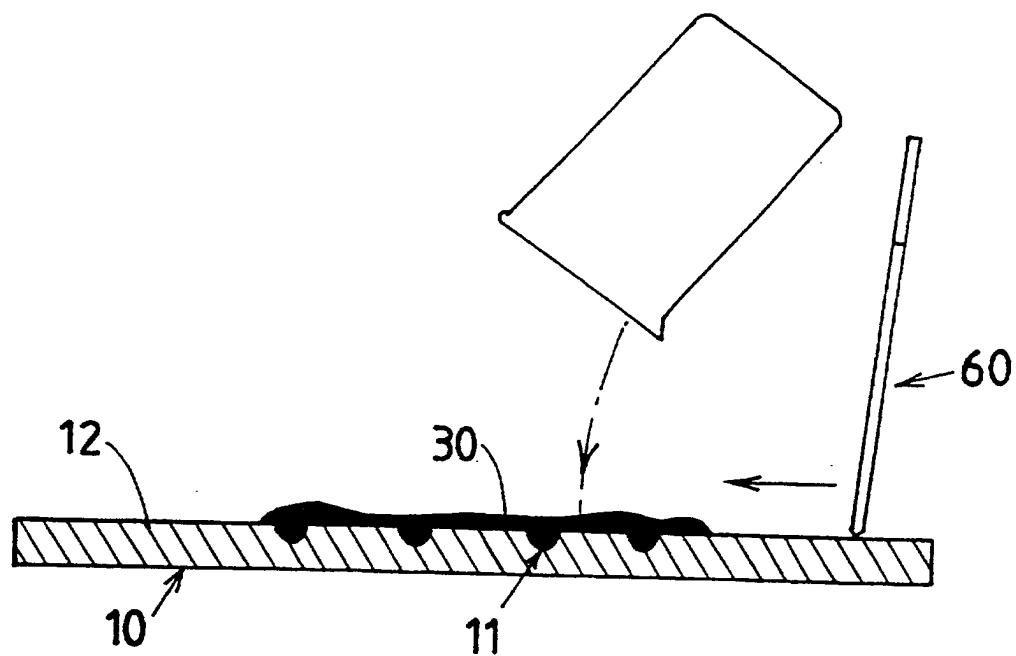


FIG. 3

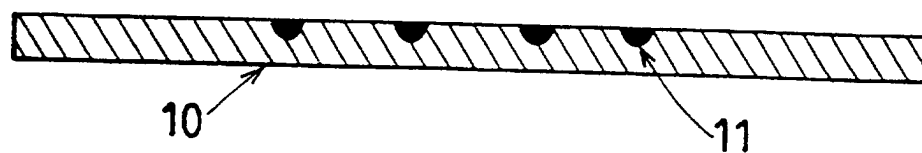


FIG. 4

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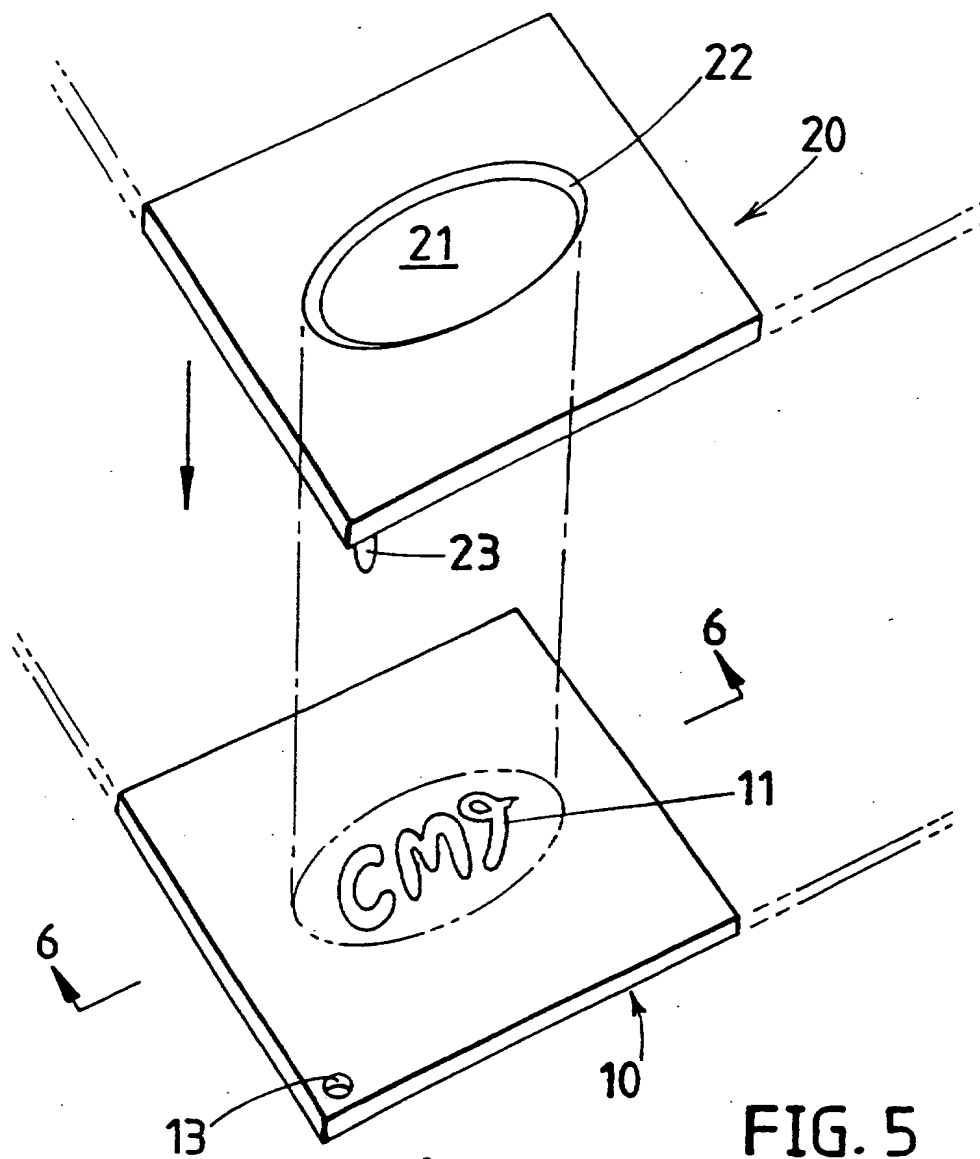


FIG. 5

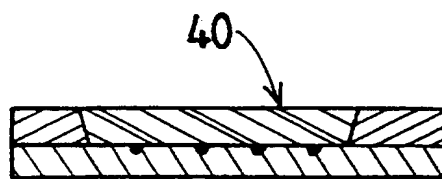


FIG. 6

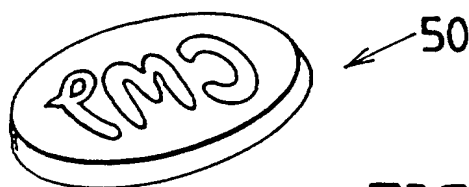


FIG. 7

### Information on patent family members

PCT/AU 97/00245

Patent Document Cited in Search Report		Patent Family Member			
AU	66814/86	EP	272768		
EP	498357	CA	2060543	EP	498357 JP 4258257
EP	299943	BE	1000858	EP	299943
US	4778683	CA	1285822	EP	273609 JP 1171436
		US	4778683		

## INTERNATIONAL SEARCH REPORT

International Application No.

PCT/AU 97/00245

**A. CLASSIFICATION OF SUBJECT MATTER**Int Cl<sup>6</sup>: A23G 1/00, 1/22

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

A23G 1/00; 1/20; 1/22

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

IPC : AU A23G 1/22

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

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**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X Y	Derwent abstract Accession No. 83-729328/32 Class D13, BE 896332 A (AKUTAGAWA CONFECTIO) 18 July 1983.	1, 7-9 2-6, 10
D, Y	AU 66814/86 A (GREEN) 25 June 1987 whole document	2-6, 10
Y	US 4778, 683 (NEWSTEDER) 18 October 1988 column 5 lines 3-14, claim 2	10



Further documents are listed in the continuation of Box C



See patent family annex

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Date of the actual completion of the international search

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C (Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X Y	Patent Abstracts of Japan, C540 page 85, JP 63-148933 A (AK UTAGAWA SEIKA KK) 21 June 1988	1 2-10
A	EP 498357 (AKUTAGAWA CONFECTIONARY CO, LTD) 12 August 1992	1-10
A	EP 299943 (ITALO - SUISSE) 18 January 1989	1-10